

PATENT SPECIFICATION

1,110,057

DRAWINGS ATTACHED.

The inventors of this invention in the sense of being the devisers thereof within the meaning of Section 16 of the Patents Act 1949 are:—HANS SUKOPP and ERNST REICHL both of German Nationality of Ulm (Donau), Marktplatz, Germany, and Oberelchingen/Krs. Neu-Ulm, Tulpenweg 13, Germany, respectively.

1,110,057



Date of Application and filing Complete Specification:

29 April, 1965.

No. 18086/65.

Application made in Germany (No. K52817 IXa/57a) on

29 April, 1964.

Complete Specification Published: 18 April, 1968.

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Index at Acceptance:—G2 A(2C8, 13F4); G2 EA6A4.

Int. Cl.:—G 03 b 1/02.

COMPLETE SPECIFICATION.

Photographic or Cinematographic Apparatus.

We, EASTMAN KODAK COMPANY, a Company organized under the Laws of the State of New Jersey, United States of America, of 343 State Street, Rochester, New York 14650, United States of America (Assignees of KODAK AKTIENGESELLSCHAFT), do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The invention relates to photographic or cinematographic apparatus wherein a film strip or the like is to be loaded, and to means for securing the leading end of the film strip or the like on a take-up spool.

An object of the present invention is the provision of a novel form of take up means for taking up the end of a film strip or the like in a photographic or cinematographic apparatus.

According to the present invention, there is provided a photographic or cinematographic apparatus having a take-up means, for drawing a strip or web of material through the apparatus, comprising a flexible elongated take-up member having a slot in one edge adjacent a trailing end of the take-up member through which slot a leader of the strip or web is threadable, and means subsequent to the loading station for confining the take-up member and the leader as they are drawn therethrough so as to cause the leader to fold upon itself and assume a U-form.

Further details of the invention are to be seen from the description of a constructional

example illustrated in the accompanying drawings.

In the drawings:

Figure 1 is a rear perspective view of a photographic camera having a film take-up means in accordance with the present invention;

Figure 2 shows a film cassette and a leading end of a film connected to a take-up member, as in Figure 1, the camera not being illustrated, and shows in chain dotted lines the position of the leading end of the film and of the take-up member after starting a wind-on movement;

Figure 3 is a rear view of the photographic camera of Figure 1, with a housing body removed, before starting a wind-on movement, and, in chain-dotted lines, after starting said wind-on movement;

Figure 4 is a part sectional underneath plan view of the camera according to Figure 3 showing also a part of the camera housing.

A camera having a film take-up means in accordance with the present invention has a trough-shaped camera housing 1 which encloses the camera body 2 having a camera cover or top plate 3. A film winding mechanism (not shown) is coupled in known manner to a shutter setting mechanism and is actuated by means of a shift lever 4. Mounted on the camera body 2 is a take-up spool 5, with which a take-up member 6 is fixedly or releasably connected. The member 6 comprises, at its forward end, a slot 6a, which serves, together with a bar 6b, as a coupling component. That edge

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of the bar 6b which faces the slot 6a is advantageously rounded in order to avoid creases or the like in a leading end 7a of a film 7. If desired, the leading end 7a can be roughened or be covered with material for increasing friction on contact between the bar 6b and the leading end 7a. The camera housing 1 has a loading aperture 1a for a cassette, cartridge or the like 8 of the film 7 and also a slot 1b for guiding the leading end 7a of the film.

Slidably guided in the region of the loading aperture 1a and of the slot 1b is a slide member 9, the loading aperture 1a being closed in light-tight manner or uncovered by a first portion 9a and the slot 1b being similarly affected by a second portion 9b.

The slide member 9 is secured by locking means (not shown) in both its open and closed positions. The slide member 9 is also under the influence of resilient means (again not shown) which urge the member towards its closed position.

A latch 10 connects the camera housing 1 to the camera body. When this latching means is removed, the camera housing 1 can, if desired, be detached for, for example, cleaning the camera body 2.

As shown in Figure 4, a film pressure plate 11 is secured by leaf springs 12 on the camera housing 1, part of which is shown in section. Edges 11a and 11b of the film pressure plate which are disposed in the region of the film guide are so constructed that the film can be wound and rewound smoothly. The pressure plate, together with the slide 9, serve as a confining means for confining the take-up member 6 and the film leader 7 when they are drawn through the apparatus to the take up spool 5.

In operation:—

The container 8 of the film 7 is loaded into the loading aperture 1a of the camera housing 1. The leading end 7a of the film is introduced into the slot 1b and thus passes into the slot 6a of the take-up member 6. A locking means is moved by the insertion of the container 8 and/or film leader 7a and releases the slide member 9, which clamps the film leader 7a in the region of the slot 1b under the influence of its resilient means and, by means of the first portion 9a, secures the film container 8 in the camera body 2.

Upon actuation of the winding lever 4, the bar 6b of the take-up member 6 connected to the take-up spool 5, pulls the film leader 7a into a confined passage through the camera housing 1 and locates it, in U-form, around the bar 6b (Figure 2). After the film leader 7a has been drawn out of the slot 1b, the slide member 9 closes the loading aperture 1a and the slot 1b in light-tight manner and is held in this position by a locking means (not shown). A film frame

counter (not shown) of the camera is engaged when the full width portion of the film 7 has passed into the region of the exposure gate 2a of the camera body 2 (approximately corresponding to the position shown in chain-dotted lines in Figure 2). The film is wound on to the take-up spool 5 together with the connecting member 6 during the subsequent winding steps.

Upon rewinding the film 7 into the container 8, after exposure of the film, the take-up member 6 is pulled by the film 7 into its initial position and, in so doing, moves the locking means which secures the slide member 9 in the closed position. After opening the slide member 9 and removing the container 8 with the exposed film 7, an unexposed film can be loaded and the operations as described above can be repeated.

The invention is not confined to the precise details of the foregoing example and variations may be made thereto. For instance, for the purpose of demonstrating the camera, it may be desirable that the winding lever 4 is actuable without a film being loaded into the camera. For this reason, the film winding mechanism may be uncoupled from the winding lever 4 when the slide member 9 is closed and no container 8 is in the camera. The connecting member 6 thereby remains in its initial position until the film winding mechanism is again coupled with the winding lever 4 by the loading of a film. Similarly a locking device may lock the lever 4 whilst the slide member 9 is in the open position.

In photographic apparatus where the film strip is not light sensitive e.g. a cinematographic projector, the slide member 9 is not essential. However a confining means for confining the take up member and film leader subsequent to the loading station is essential.

The recess in the camera body 2 for the container 8 may be so shaped that the film path widens adjacent the slot 1b so as, on rewinding the film 7, the leader 7a frees itself from the bar 6b of the member 6 at the end of the winding operation.

The take-up member 6 is constructed of a material such that it is sufficiently flexible to be wound on the take-up spool 5 and to form a tight coil thereon.

A sprocket of the film counter, contacted by the film, is advantageously arranged after the exposure gate but may, if desired, be provided before the exposure gate or even in the region thereof.

A datum may be provided externally of the camera housing 1 and relative to the slot 1b to indicate the length of the leader 7a which should protrude from the slot on loading the container 8 into the camera.

The slide member 9 may act as a cutter device for trimming the leader 7a to the cor-

rect protruding length on movement to its closed position. Alternatively, a separate cutter device may be provided for this purpose.

- 5 It will be appreciated that the invention is not confined to photographic cameras and is equally applicable to cinematographic projectors or cameras, or to other photographic or cinematographic apparatus where-
10 in a strip or web of material is to be threaded or drawn through the apparatus.

WHAT WE CLAIM IS:—

- 1 A photographic or cinematographic apparatus having a take-up means, for drawing
15 a strip or web of material through the apparatus, comprising a flexible elongated take-up member having a slot in one edge adjacent a trailing end of the take-up member wherethrough a leader of the strip or
20 web is threadable at a loading station, and means subsequent to the loading station for confining the take-up member and the leader as they are drawn therethrough so as to cause the leader to fold upon itself and
25 assume a U-form.

2. An apparatus as claimed in claim 1 wherein the strip or web comprises a film strip.

3. An apparatus as claimed in claim 1
30 or 2 in the form of a photographic camera and wherein the take-up member is connected to a take-up spool thereof.

4. An apparatus as claimed in claim 3
35 wherein a further slot is provided in a housing of the camera for guiding the strip or web leader into the slot in the take-up member.

5. An apparatus as claimed in claim 3
40 or 4, characterised in that the take-up member is returned to an initial position upon rewinding of the strip or web into a cart-ridge, cassette or the like therefor.

6. An apparatus as claimed in any pre-
45 ceding claim characterised in that, when the strip or web is light sensitive, a loading aperture of the apparatus and also a slot in the apparatus housing, corresponding to the slot in the take-up member, are covered in light-
50 tight manner by a slide member, flap or the like.

7. An apparatus according to claim 6,
characterised in that the slide member, flap or the like secures a cassette, cartridge or
55 container of the light sensitive material, after loading in the housing, and uncovering of the loading aperture and the housing slot is effected when the leader, during re-
winding into the cassette, cartridge or con-
60 tainer, is drawn from the take-up slot into the housing.

8. An apparatus according to claim 6 or 7, characterised in that the slide member, flap or the like is L-shaped and simultane-ously covers the loading aperture and the

housing slot under the influence of spring
65 means.

9. An apparatus according to claim 6,
7 or 8, characterised in that the position of the slide member, flap or the like in both
70 the open and closed states of the loading aperture is ensured by locking means.

10. An apparatus according to claim 9,
characterised in that that locking means which ensures the position of the slide mem-
75 ber, flap or the like in the open state of loading aperture, is unlocked upon the in-
troduction of the strip or web leader, or the container therefor into the loading aper-
ture.

11. An apparatus according to claim 9
80 or 10, characterised in that that locking means which ensures the position of the slide member, flap or the like in the closed state of the loading aperture is unlocked
85 by the take-up member or by means connected therewith on the take-up member reaching the initial position.

12. An apparatus according to claim 9,
10 or 11, characterised in that in the open position of the slide member, flap or the
90 like, a strip or web winding mechanism, which, in the case of a camera, is advance-
ageously coupled with the shutter setting mechanism, is locked.

13. An apparatus according to claim 9,
95 10, 11 or 12, characterised in that the slide member, flap or the like is closable even when a strip is not loaded in the loading aperture, for example for demonstration
100 purposes, the strip or web winding mechanism being uncoupled by manual means from a winding lever therefor when a strip or web, or container therefor, is not loaded in the loading aperture.

14. An apparatus according to claim 6
105 or any claim appendant thereto, characterised in that a guide for the strip or web is widened in the region of the loading aperture in order to facilitate the detachment of the leader from the take-up member, on
110 rewinding.

15. An apparatus according to any of
claims 1 to 14, characterised in that a coup-
115 ling part of the take-up member which directly contacts the leader is so constructed that creases or the like in the leader are avoided.

16. An apparatus according to any of
120 claims 1 to 15, characterised in that the take-up member is constructed of a ma-
terial capable of being wound to a tight coil on a take-up spool.

17. An apparatus according to any pre-
ceding claim, characterised in that a meter-
125 ing sprocket roller of the strip or web is arranged, in the case of a camera, after an exposure gate of the camera, and engage-
ment of a counter of the sprocket is con-

trolled by the leading end of the strip or web.

18. An apparatus according to any preceding claim, characterised in that the
5 confining means of the apparatus and its housing are so arranged for guiding the strip or web that the strip or web can be released from the take-up member during a rewinding operation only when the take-up
10 member again reaches its initial position.

19. An apparatus according to any preceding claim characterised in that a mark is provided on the apparatus housing to indicate that length of the strip or web leader
15 which is to project from the apparatus housing on loading the strip or web thereinto and which mark is not to be substantially exceeded or not reached.

20. An apparatus according to any preceding claim, characterised in that that
20 length of the strip or web leader necessary for being secured on the take-up member is determined by a cutter device which is controlled or formed by a slide member, flap or the like for covering a loading aperture
25 of the apparatus or a slot in the apparatus housing.

21. A photographic or cinematographic apparatus having a take-up means, for drawing
30 a strip or web through the apparatus, substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

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Printed for Her Majesty's Stationery Office by Burgess & Son (Abingdon), Ltd.—1968.
Published at The Patent Office, 25 Southampton Buildings, London, W.C.2,
from which copies may be obtained.

Fig. 1.

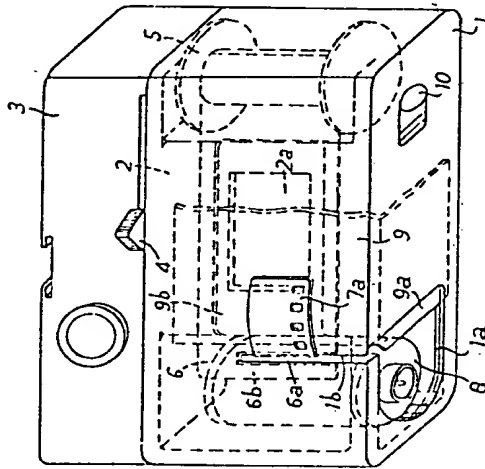


Fig. 3.

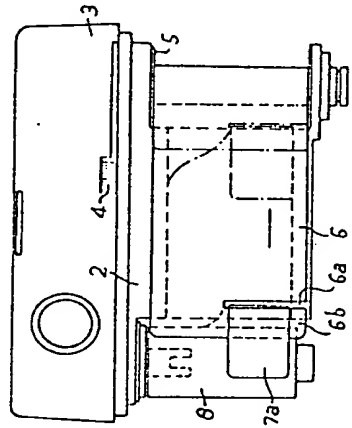


Fig. 2.

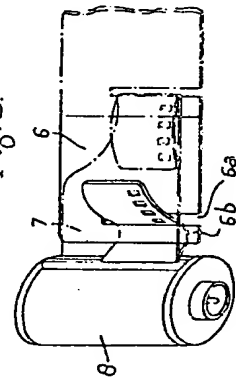


Fig. 4.

